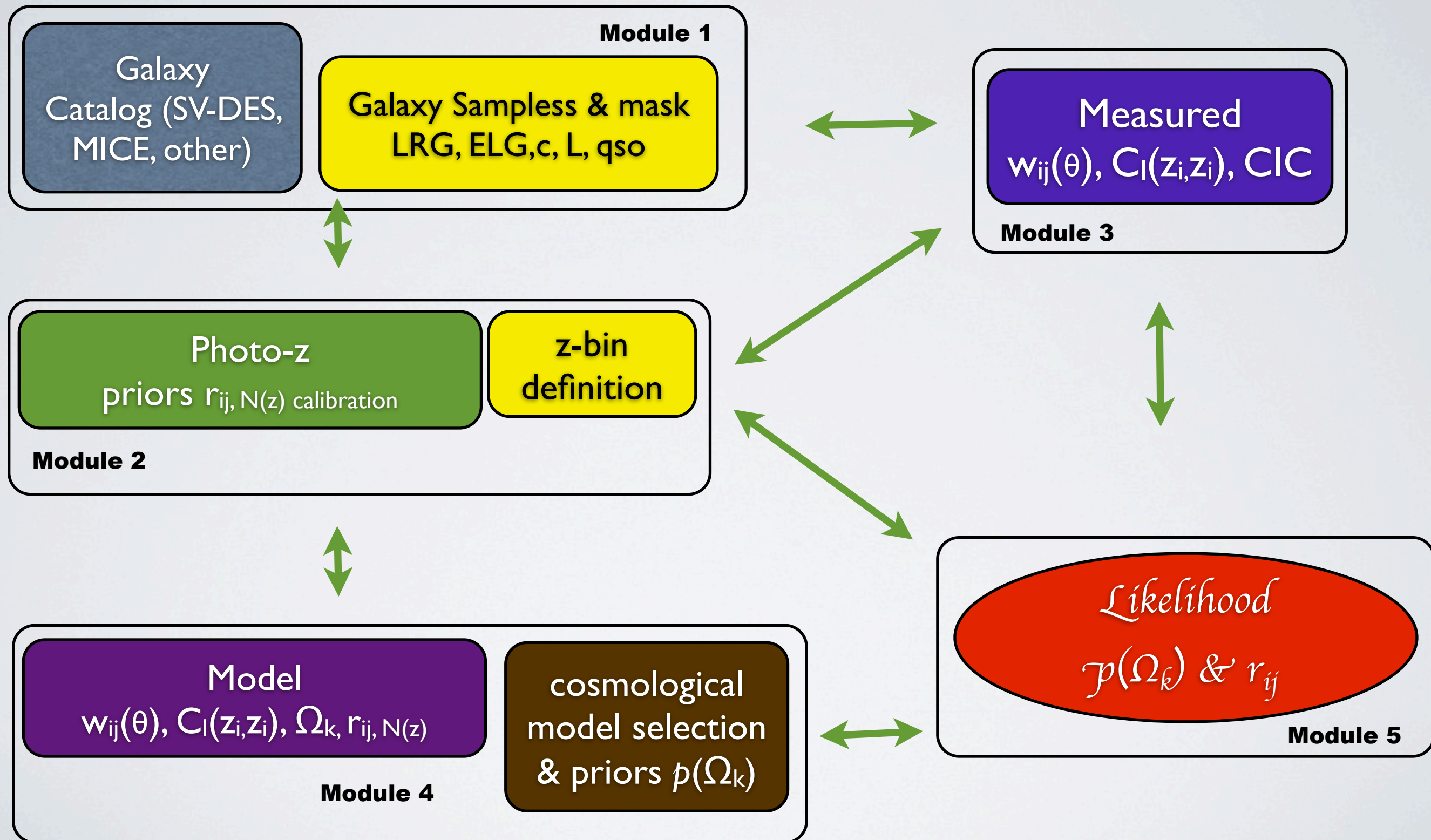# Early Galaxy Clustering Measurements in SV data

Anne Bauer, Jacobo Asorey, Francisco Castander, Martin Crocce, Martin Eriksen, Enrique Gaztanaga, Pol Marti, Ramon Miquel, Carlos Sanchez, etc.

DARK ENERGY SURVEY

An end-to-end pipeline for cosmological analysis

Clustering analysis in the 4 calibration fields

- VVDS Deep 02hr
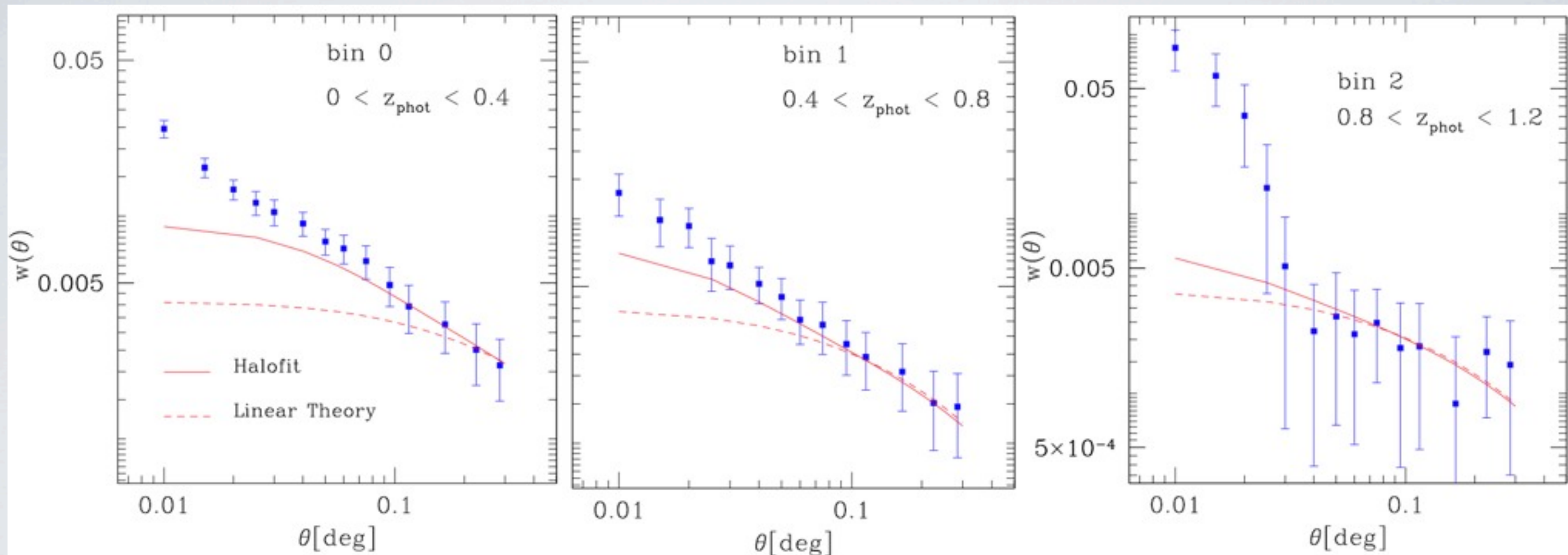- CDFS
- VVDS Deep 14hr
- Cosmos

➤ Roughly 1 sq deg each field and 500,000 objects
➤ Mag limit selection ($18 < \text{i\_mag\_auto} < 24$) and star-gal separation ($\text{spread\_model} > 0.002$)
➤ We run 2 different photo-z codes ANNz and BPZ

BPZ results : redshift distributions in 3 bins

Redshift distributions in 3 bins: $0 < z_\text{phot} < 0.4$, $0.4 < z_\text{phot} < 0.8$, $0.8 < z_\text{phot} < 1.2$
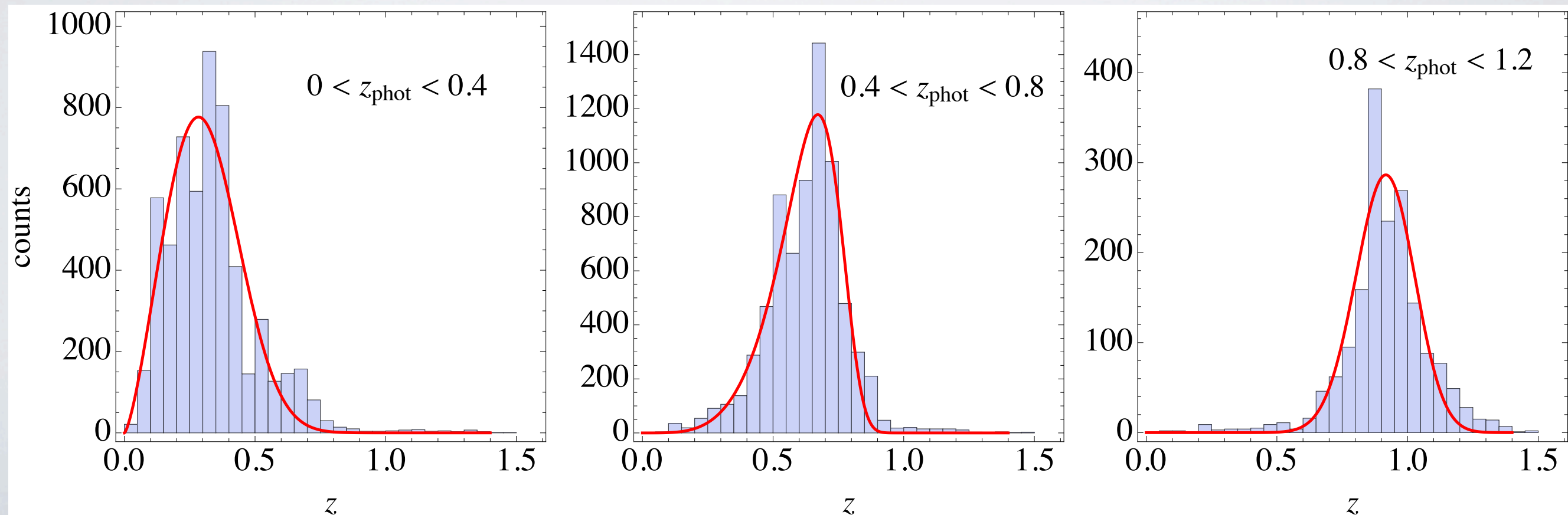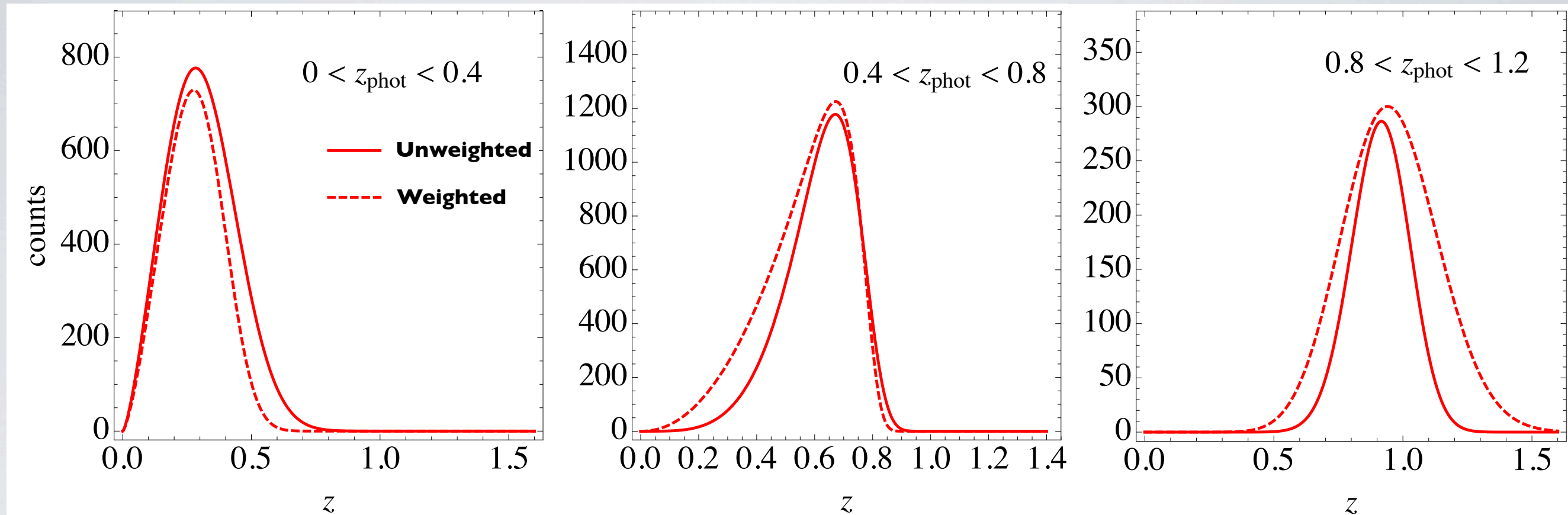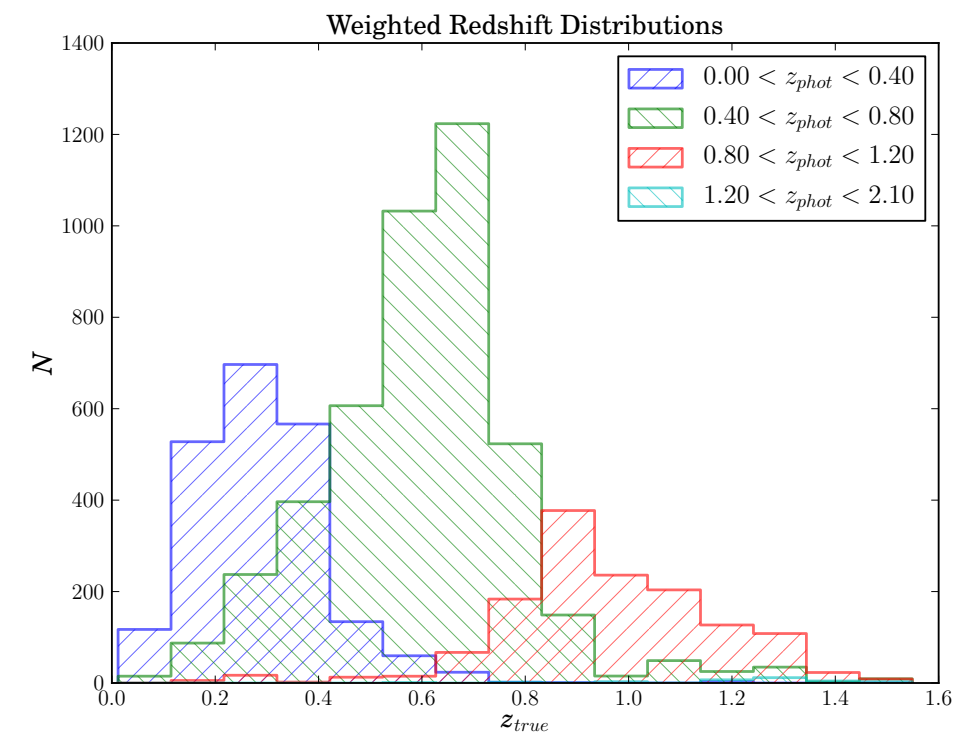
BPZ results : small scale clustering in 3 bins

➤ Nonlinear Effects start to kick in at least at 0.1 deg, the clustering excess over the model towards smaller angles could be due to nonlinear biasing, systematics, ..
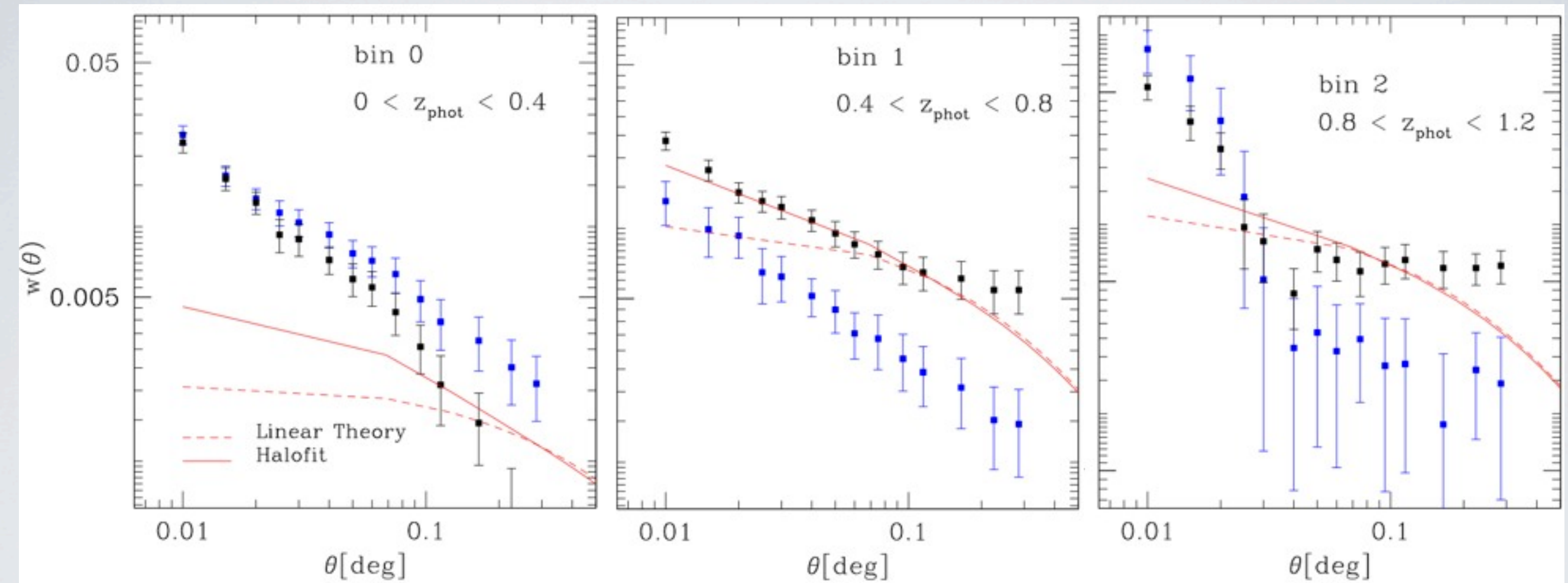
ANNz : weight the spectroscopic sample to estimate N(z)

➤ Distributions are broader (but more realistic photo-z)

# ANNz & BPZ results : small scale clustering in 3 bins

➤ Black symbols are ANNz , Blue same BPZ (as previous slides)

➤ A useful comparison; clearly shows problems in the data and/or reduction.

Clustering analysis in SPT-E field

➤ Similar selection as before (i_mag_auto<24, and i_spread > 0.002), 1.4 million objects
➤ Notice the crowded source contamination at DEC < -60. This is probably due to stars from the LMC, a problem for low-z co-adds

−1.0 ▬▬▬▬▬ 2.0
(−106.0, −58.0) Galactic
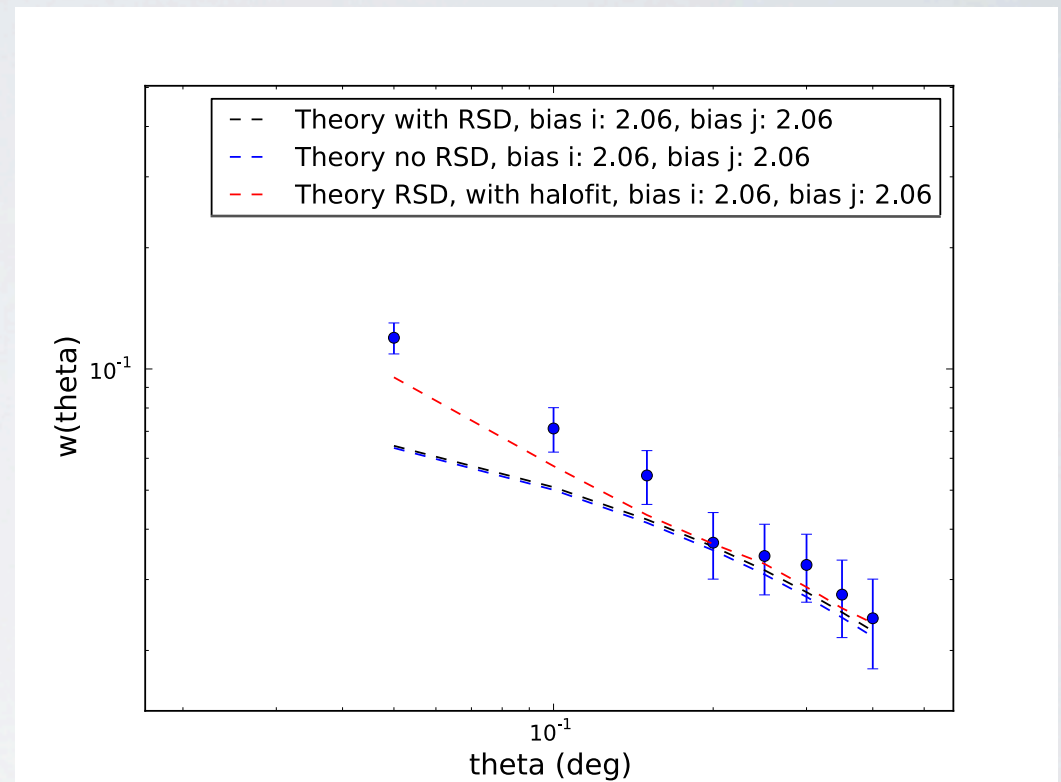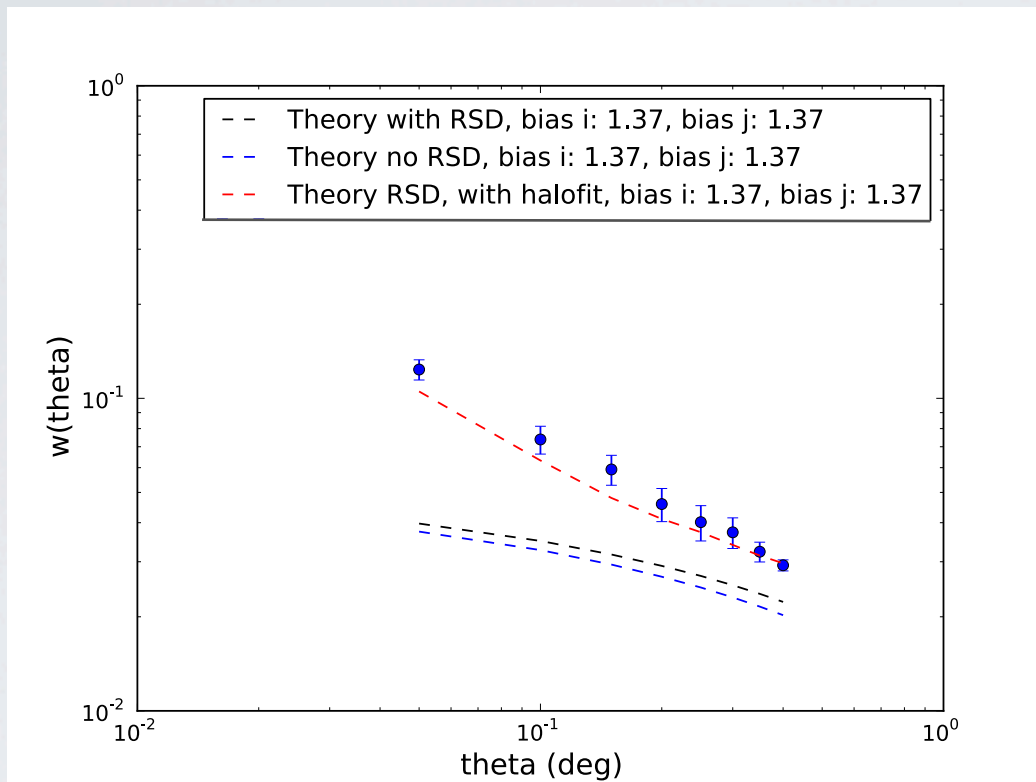

DES-SPT-E galaxies
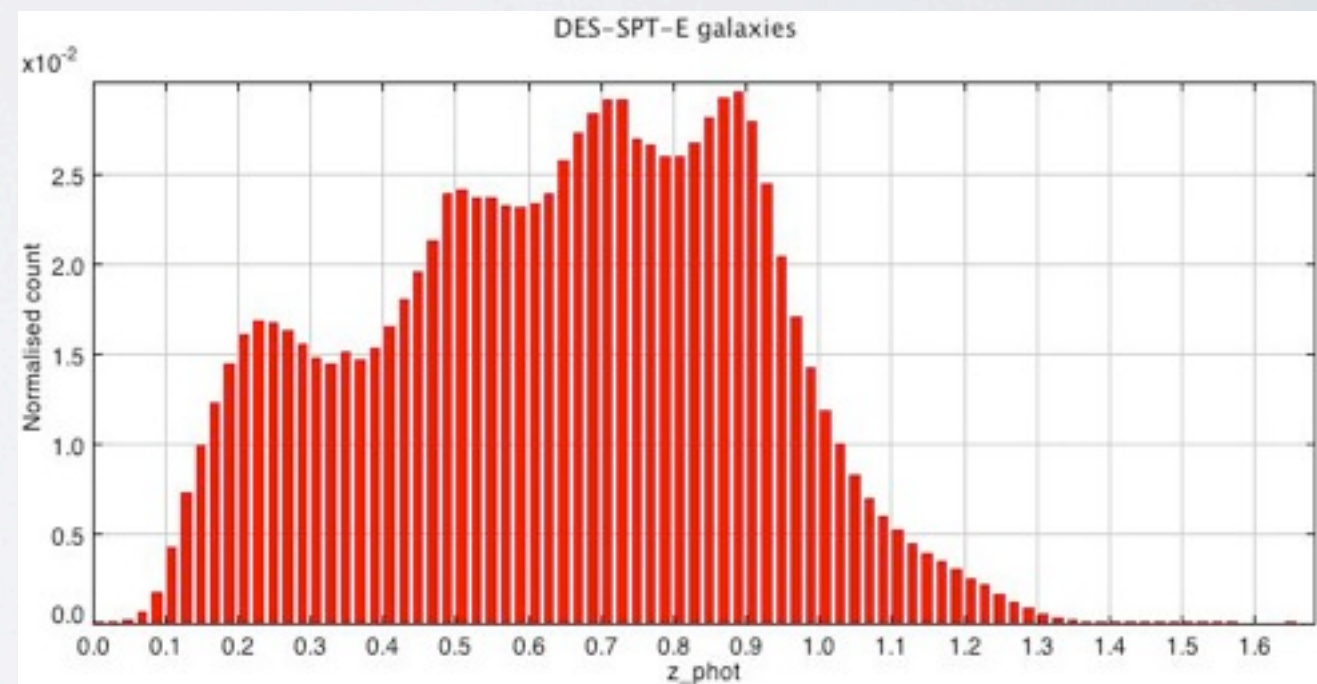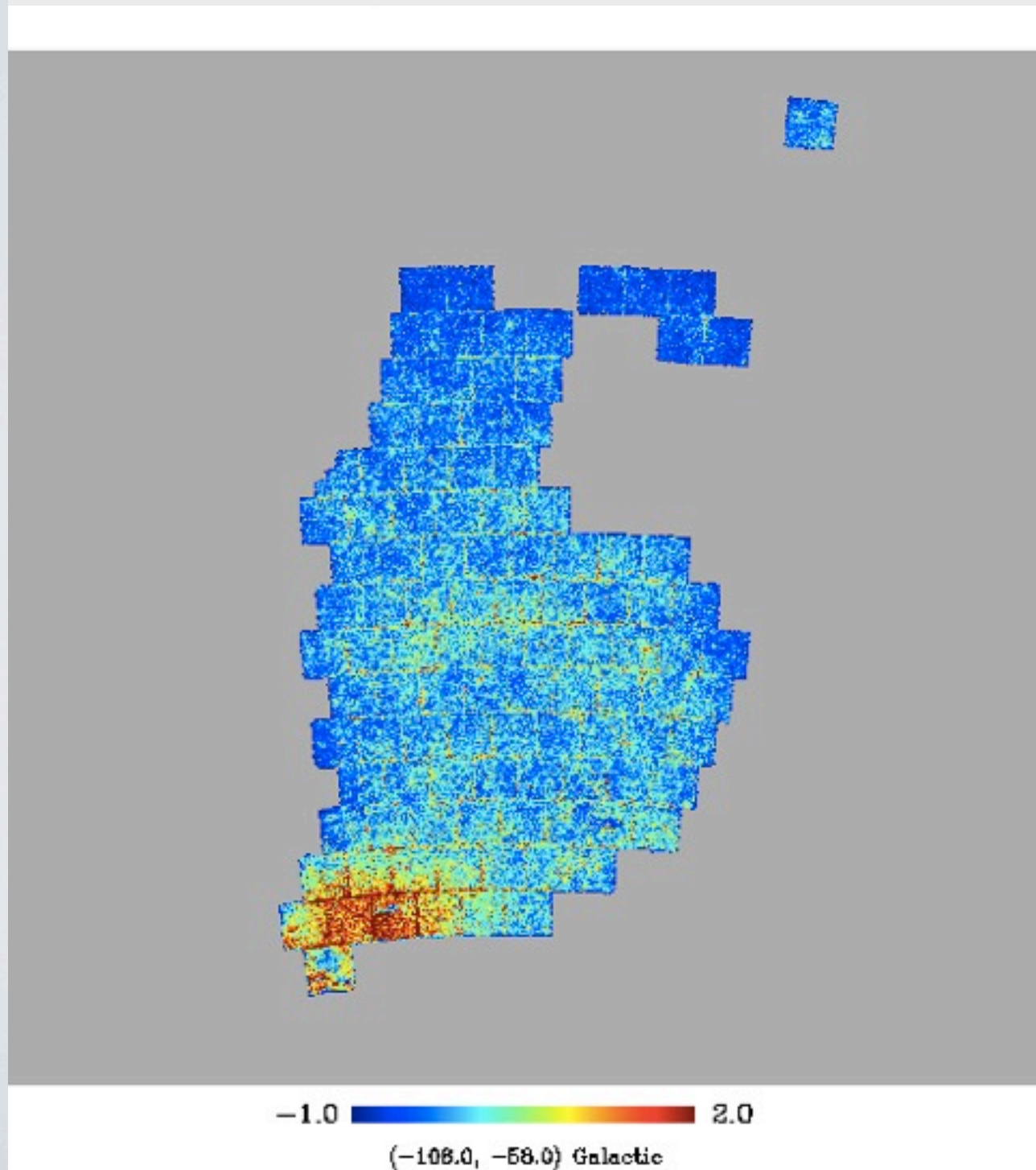
ANNZ results

➤ Impact on Clustering for low-z bin
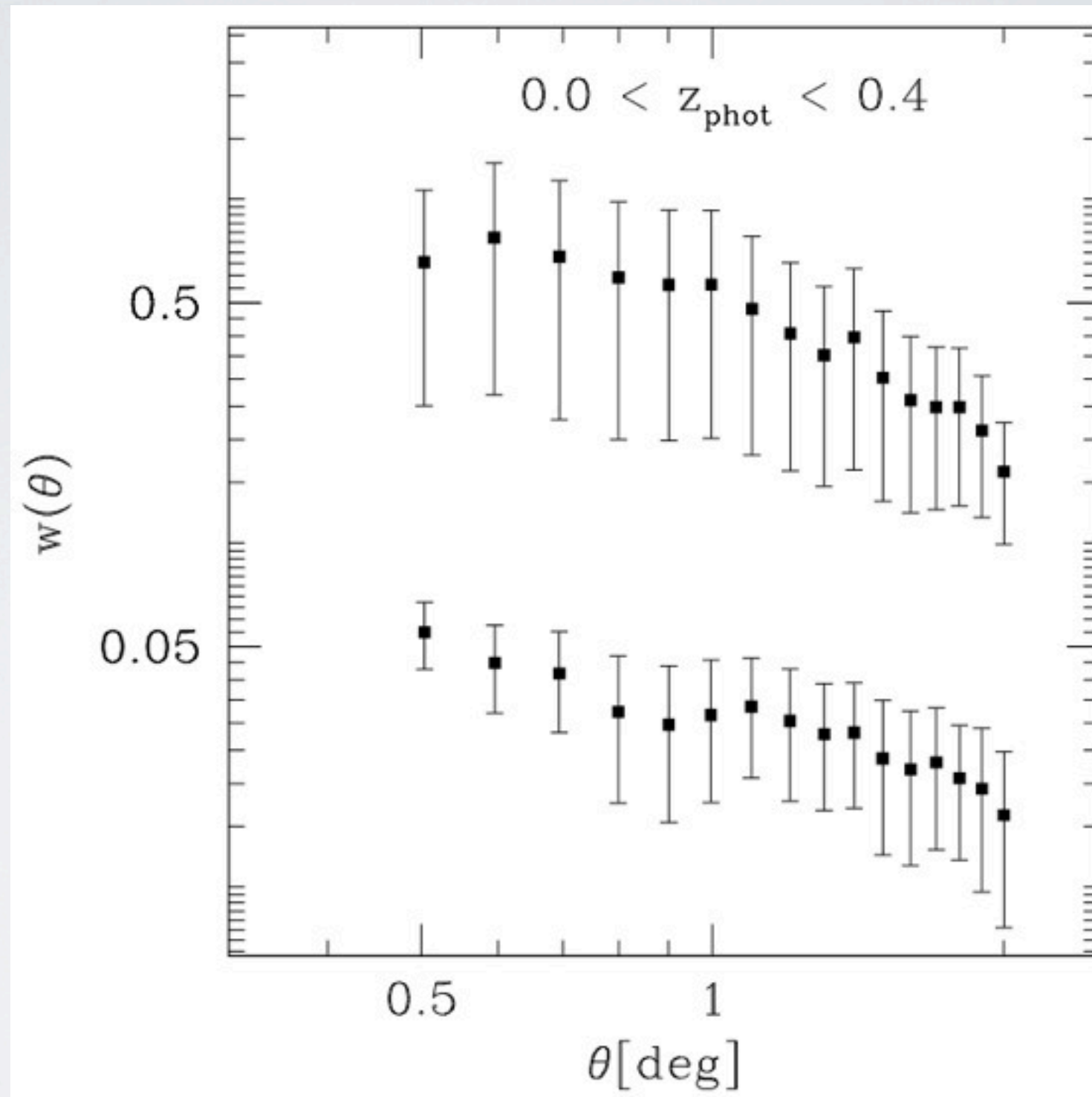
Clustering analysis in SPT-E field
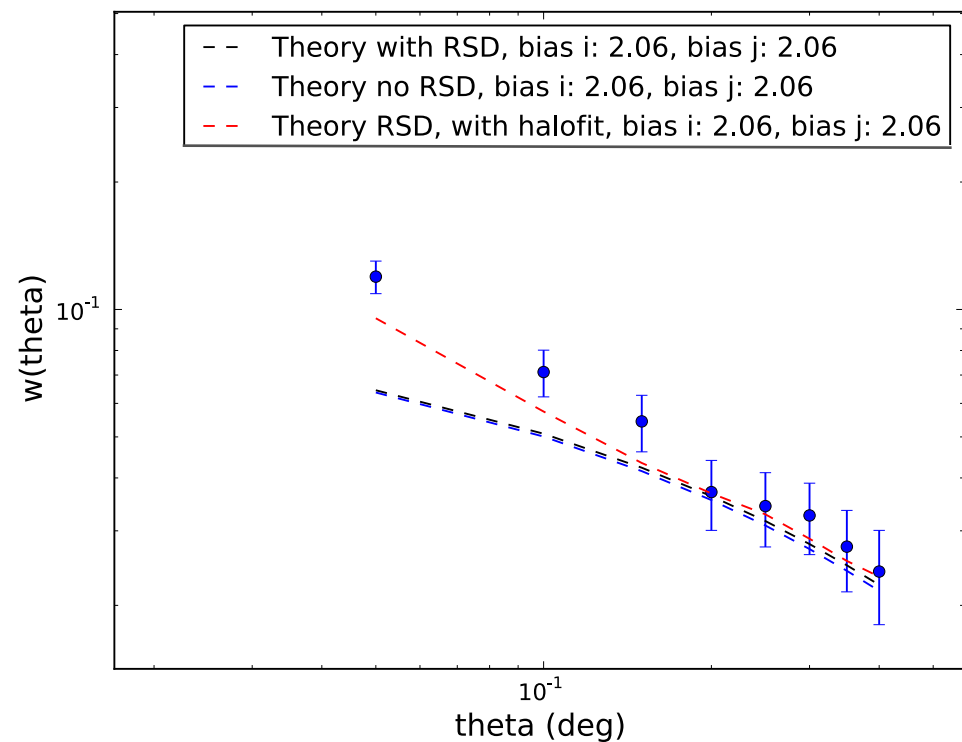cutting out the DES < -61 region

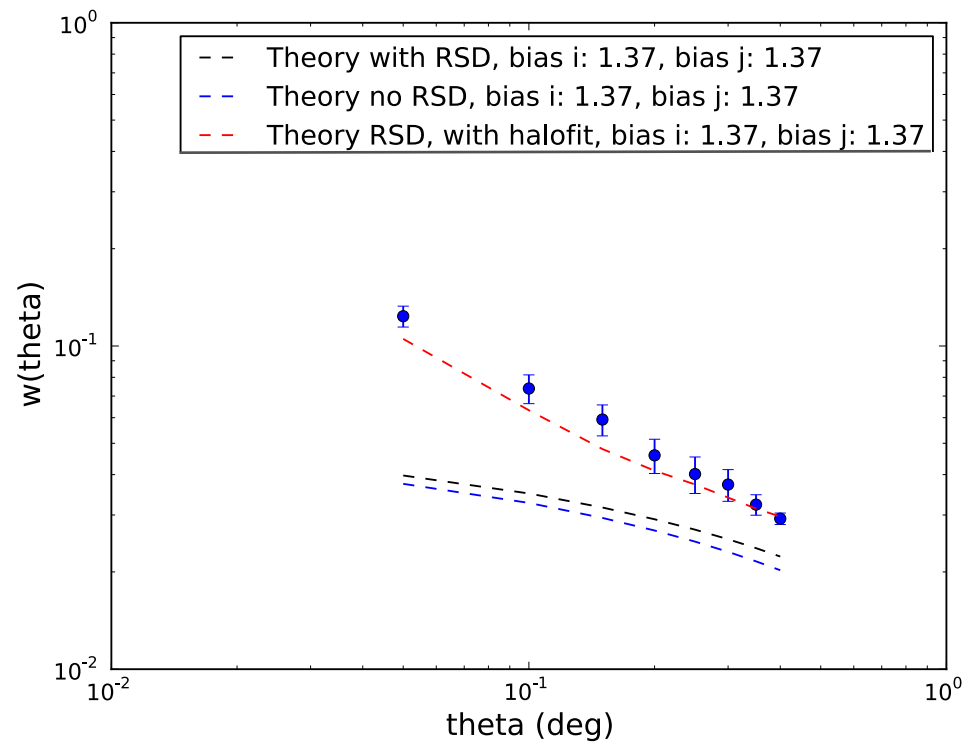Autocorrelations using BPZ

➤ No training set in the field
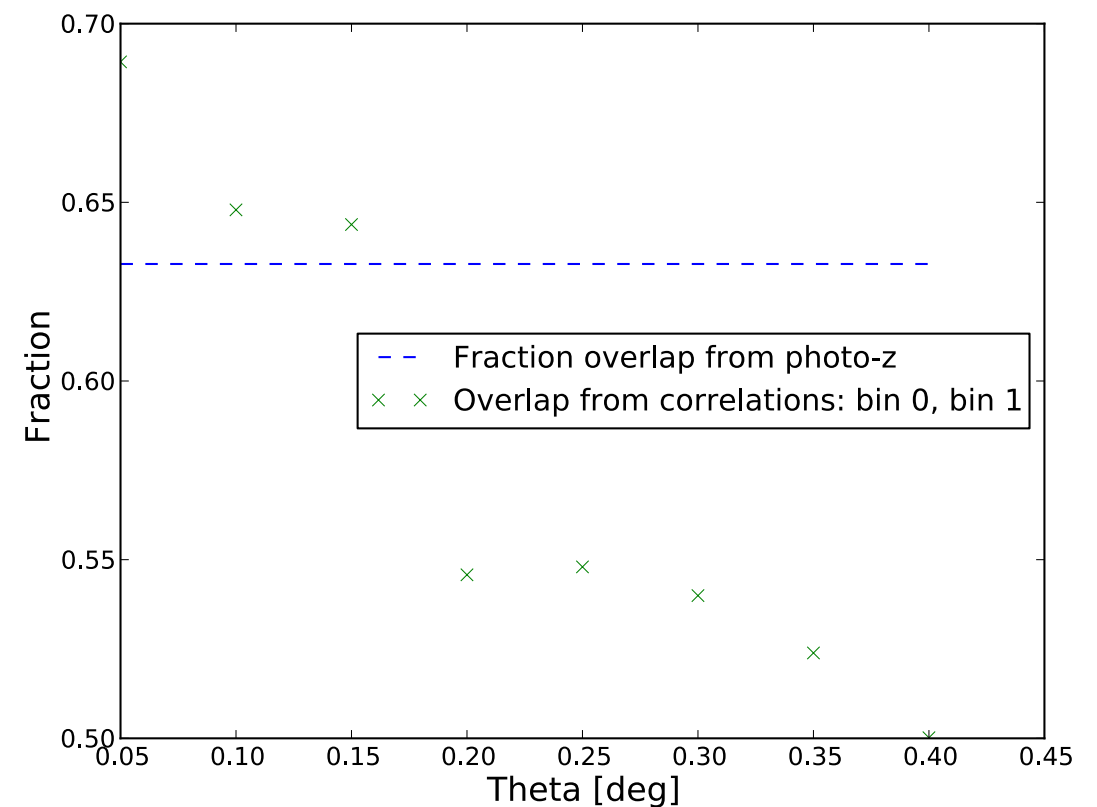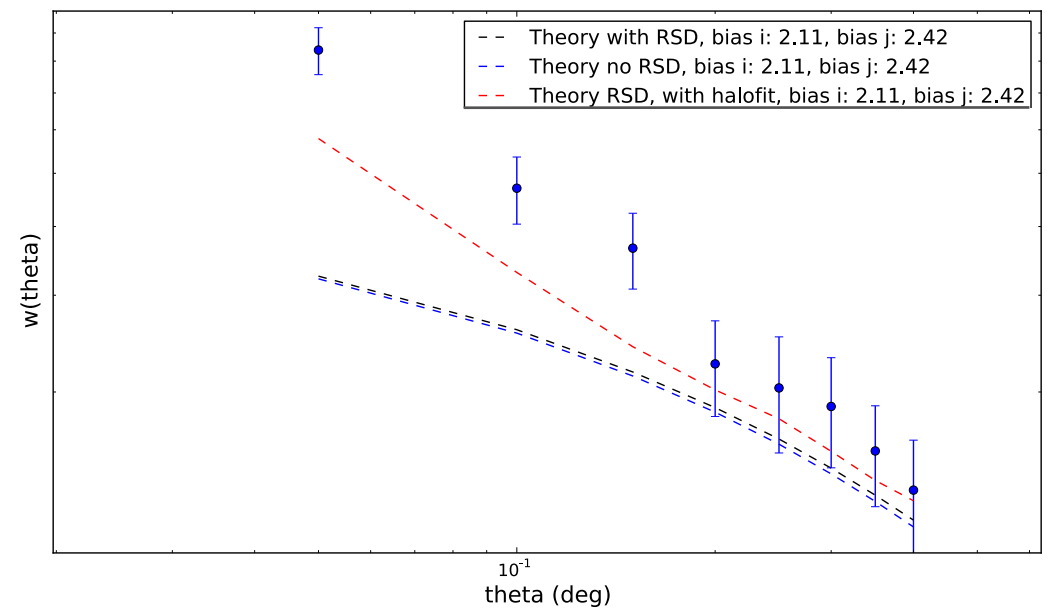➤ Are the best-fit biases reasonable?
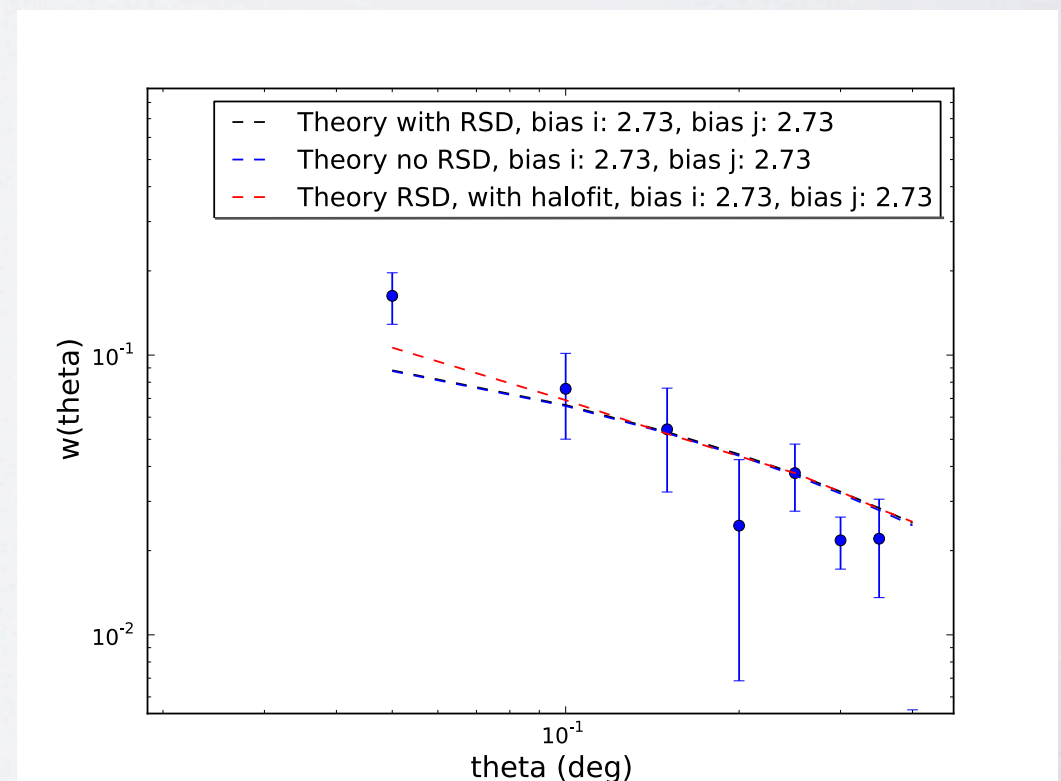
Cross-correlations

SPT-E region (dec>-61), z 0.0-0.4 vs. 0.4-0.8, BPZ

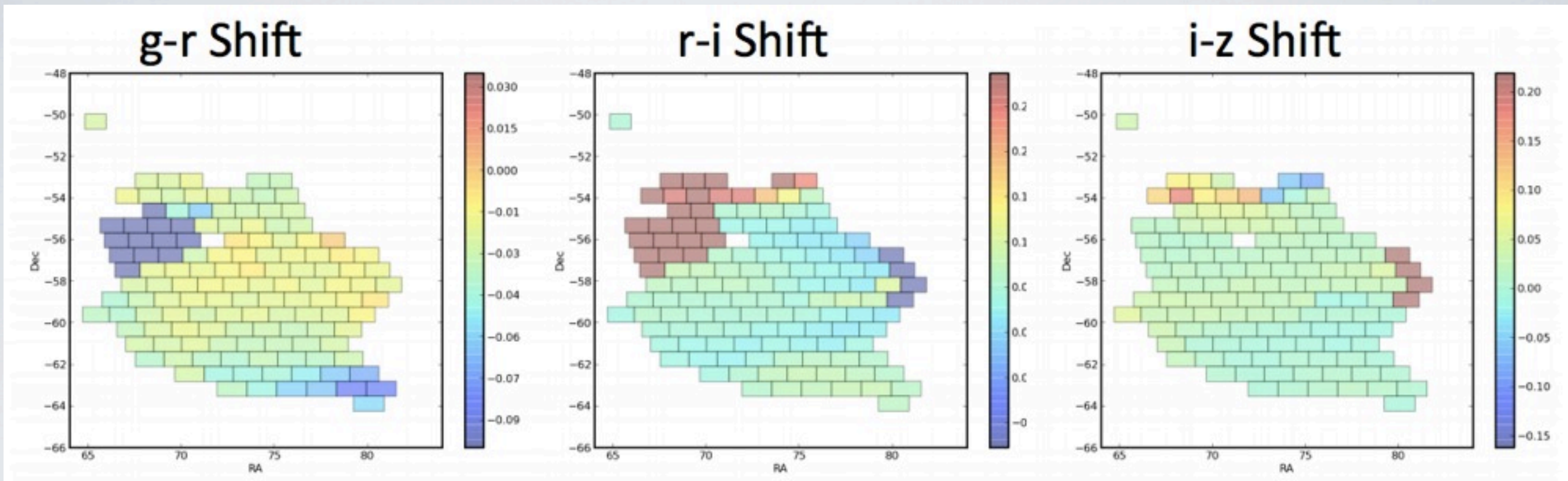### Autocorrelations bin 0 & 1

Cross-correlation bin 0 with 1

Clustering analysis in SPT-E field
effects of calibration: stellar locus measurements

From Bob Armstrong's Talk, Calibration session on Tuesday

➤ Color shifts of a few percent → Trouble in our mag-limited samples!

Summary

➤ We have been studying the SV fields

  ➤ Good to compare the 4 calibration fields with the SPT-E

➤ Developing an analysis pipeline: photo-z, clustering measurement, modeling, likelihood

  ➤ Now at prototype stage

➤ Data are not like simulations!

  ➤ Need to understand the "features" & make more quality cuts

  ➤ Should give feedback to the DESDM people this spring, before next reduction run.